

Does It Matter If M-Discs Are Real Or “Fake”? Why I Don’t Think So

Written by: Daniel Rosehill. Date: Jan 24th 2024.



A lot of folks over on Reddit are skeptical about the M-Disc.

I think this topic has been debated pretty exhaustively. There are two camps: believers (I'm here) and disbelievers (plenty of others).

People using optical for archival are really concerned about data permanence. So it's understandable that the debate is somewhat 'heated' at times — even if from the outside it must seem utterly ridiculous.

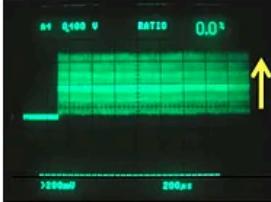
I'd like to try to offer a fresh perspective.

The Blu Ray LTH -> HTL manufacturing shift

What is LTH and HTL?

Verbatim.

- Low to High(LTH) and High to Low(HTL) correspond to the reflectivity change by recording, resulting the opposite signal polarity.
- LTH and HTL are based on a nature of the inorganic and organic recording layer material, respectively.

	LTH(Organic dye BD-R)	HTL(Inorganic BD-R/RE)
Unrecorded		
Recorded		

Blu Rays were originally made using LTH (low to high) technology. This consisted of an inorganic layer which is widely agreed to offer better longevity than any of the organic dyes, including AZO.

Unfortunately the industry cheaped out and decided that Blu Ray shouldn't be manufactured any better than its predecessors (CDs and DVDs).

We shifted over to organic dies with inferior longevity. Like many I think that this was a major retrograde move. My personal view: I'd trust archival CDs and DVDs over these products (rationale: at least you've got the gold as a buffer).

Low cost and High efficiency of LTH disc production based on experience



- Key difference in manufacturing is in formation process of the recording layer
- The cost difference in HTL vs. LTH will finally be similar to that in RW vs. R in CD/DVD era. More than 50% higher production efficiency is expected for LTH(dye) disc than HTL(inorganic) disc.

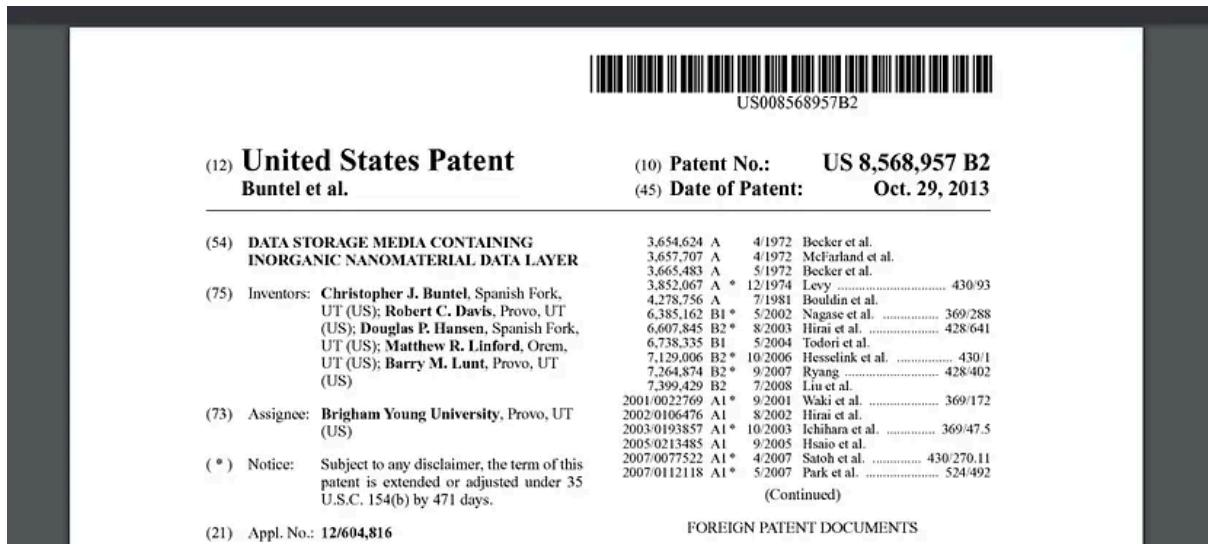
	HTL BD-R	LTH BD-R
Recording layer Material	Inorganic alloy or composite	Organic dye
Manufacturing process	Sputtering	Spin-coating
	Vacuum process Sequential operation	Air ambient Easy parallel operation
Products with similar process	CD-RW DVD-RAM DVD+-RW MO BD-RE	CD-R DVD+R,-R

The old LTH discs used a technology called MABL — metal ablative recording layer. I've seen it widely estimated that this should yield a disc longevity of something in the region of 100 years. Verbatim has confirmed that it no longer manufactures LTH BD-R, BD-DL, or BDXL. Hence even if the Verbatim M-Discs were "only" LTH, buying them would represent an opportunity to purchase an otherwise unbuyable and superior predecessor technology to the inferior HTL BD-Rs that are currently on the market!



The M-Disc skeptics' claim

The M-Disc writes data to an inorganic layer. Its patent is freely accessible on Google Patents (and elsewhere). Many people are convinced however that the composition of this inorganic layer is no different than LTH.



I have a quick retort to this: if Verbatim already had the tech, why buy it from Millenniata (the startup which developed the M-Disc technology before going bankrupt)?

But anyway, here's a different perspective that maybe offers food for thought.

Does digital data permanence beyond a century actually matter!? I suggest that it doesn't

I would contend that 100 years' archival life is good enough for anybody and that projections of longevity beyond that point in time are kind of a moot point. I say this because 100 years is more than the average human lifespan in any country at the present time.

My mission for data preservation in this:

I want to keep the stuff free from bitrot or complete failure until the successor technology comes to market.

This could be holographic tech. This could be something entirely different than anything we've had before that's currently only in early stage R&D.

Either way, I don't see the M-Disc as my indefinite storage medium. It's just a cool tech that can keep my data safe — on something like digital ice — until, like old VHS tapes, it gets moved onto something better.

Viewed from this perspective, I actually don't really care whether I'm getting "real" M-Disc (even though I believe I am!) or old LTH stock that Verbatim has sneakily tried to pass off as something different.

The 25GB M-Discs are about \$1 a disc. If the old LTH ones were \$1 a disc .. at my two discs per month of disk generation ... I'm not too put out about being shafted the price of a cup of coffee.

If I were really worried (I'm not), I'd create ECC and parity data to be ready to repair any potential corruption. There are probably other options too.

Once my stuff is reasonable safe for 100 years — hell, I'll settle for 50 — it's "good enough" for me and a lot better than storing it on HDD or LTO which could begin to go bad in as little as a few years or as long as 30. But probably not much longer than that.

Refuting Other Claims Against The M-Disc

But ... the manufacturer ID (MID) doesn't say Millenniata?

Manufacturer IDs, PNs, and other reference data for physical media (and other tech products!) commonly evolve over time as manufacturers bring new products to market, go through acquisitions, etc. Millenniata Inc. ceased operations in 2016 before the M-Disc technology was licensed to Verbatim and Ritek. It is not surprising at all that the MID has changed as production was brought over to Verbatim (which was acquired in 2020 by CMC). This is not evidence that products bearing a new MID are "fake."

But ... the box looks different?

Evidence of minor cosmetic changes to the disc packaging is again not evidence that the new products are "fake." This can be explained by a multiplicity of benign factors including a change in ink, printer, etc. Packaging can be redesigned and indeed usually is as time evolves. It would be unusual if a manufacturer never updated these cosmetic details even slightly.

But ... if my regular Blu Ray writer can burn M-Discs how could the technology be unique?

Millenniata addressed compatibility around the M-Disc frequently. The company stated in a press release that the Blu Ray variants (BD-R, BD-DL, BDXL) would be compatible with the vast majority of Blu Ray players. This compatibility reflected the outcome of successful materials engineering. The novelty in the M-Disc product is due to the composition of the inorganic layer and the write method employed to engrave the disc. The fact that this technology was intercompatible with existing Blu Ray hardware again does not prove that the technology advanced by M-Disc was not novel and innovative.

Concluding Thoughts

Data permanence is an issue that has been historically neglected by the storage industry. Data permanence remains an unsolved problem even in today's era of easy cloud computing and ever-increasing storage densities. Innovation in this space should be welcomed however it comes.